

Memorandum

**Re: Emerging Issues Paper
Aerospace Manufacturing**

This technical memorandum summarizes information for Washington state system airports regarding aerospace manufacturing industry activity in the state, and identifies opportunities for airports to petition commercial and general aviation aerospace manufacturers to establish operations on airport properties.

Introduction

The State of Washington is a global leader in the aerospace industry and has been since the beginning of the aviation age in the early 20th century. Boeing Company's incorporation in the region in 1916 has grown into an industry which drives economic growth and employment throughout the state. As of 2012, there were an estimated 175 aerospace businesses and an additional 1,175 aerospace-related businesses in Washington, generating an estimated \$51.2 billion in revenues, and accounting for approximately 132,500 jobs¹.

While Boeing Commercial represents a large majority of aerospace activity in the state (95 percent of revenue, and 64 percent of aerospace related jobs), these aerospace businesses include representation throughout the entire supply chain of aircraft manufacturing, including air frames, avionics, navigational systems, composites, tooling, and maintenance.

This document identifies where aerospace manufacturers are located across the state and in proximity to airports in the State of Washington airport system, as well as identifying what airports can do to position themselves for commercial and general aviation aerospace manufacturers to establish operations at their facilities.

Washington's Aerospace Sector

The aerospace sector in Washington is very diverse in its business types and also their location. As shown in **Figure 1**, the majority of aerospace related companies are located around Puget Sound but many are also clustered around Spokane in the eastern part of the state as well. The locations of Washington's airports are also depicted in relation to these aerospace firms. **Figure 2** illustrates the location, size and type of aerospace establishments in the state.

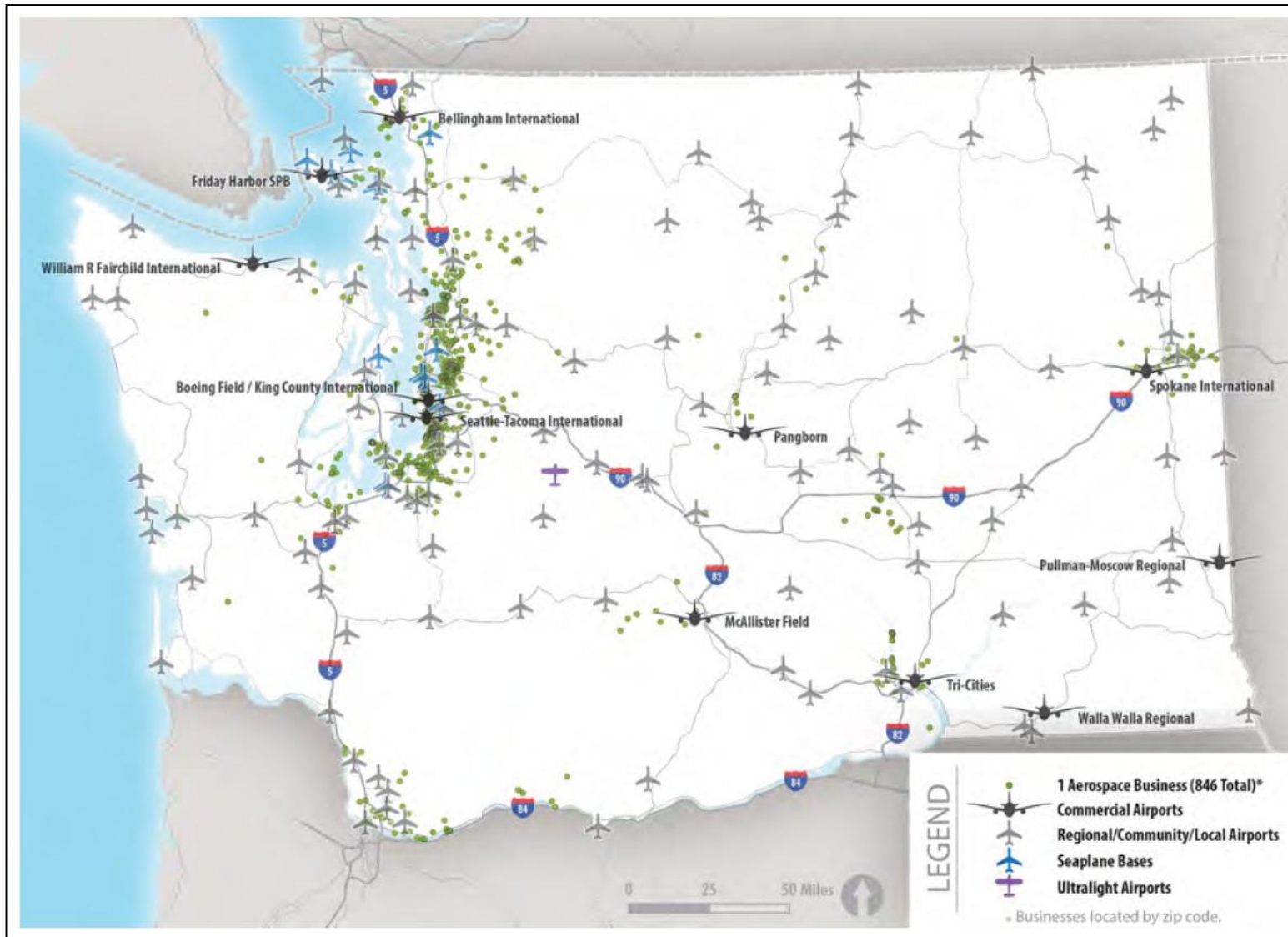
As part of the WASP study, airports were surveyed and asked if the following manufacturing occurred at the airport:

- Aircraft Manufacturing
- Unmanned Aircraft Systems (UAS) manufacturing/research

These aerospace supporting airports are identified in **Figure 3**.

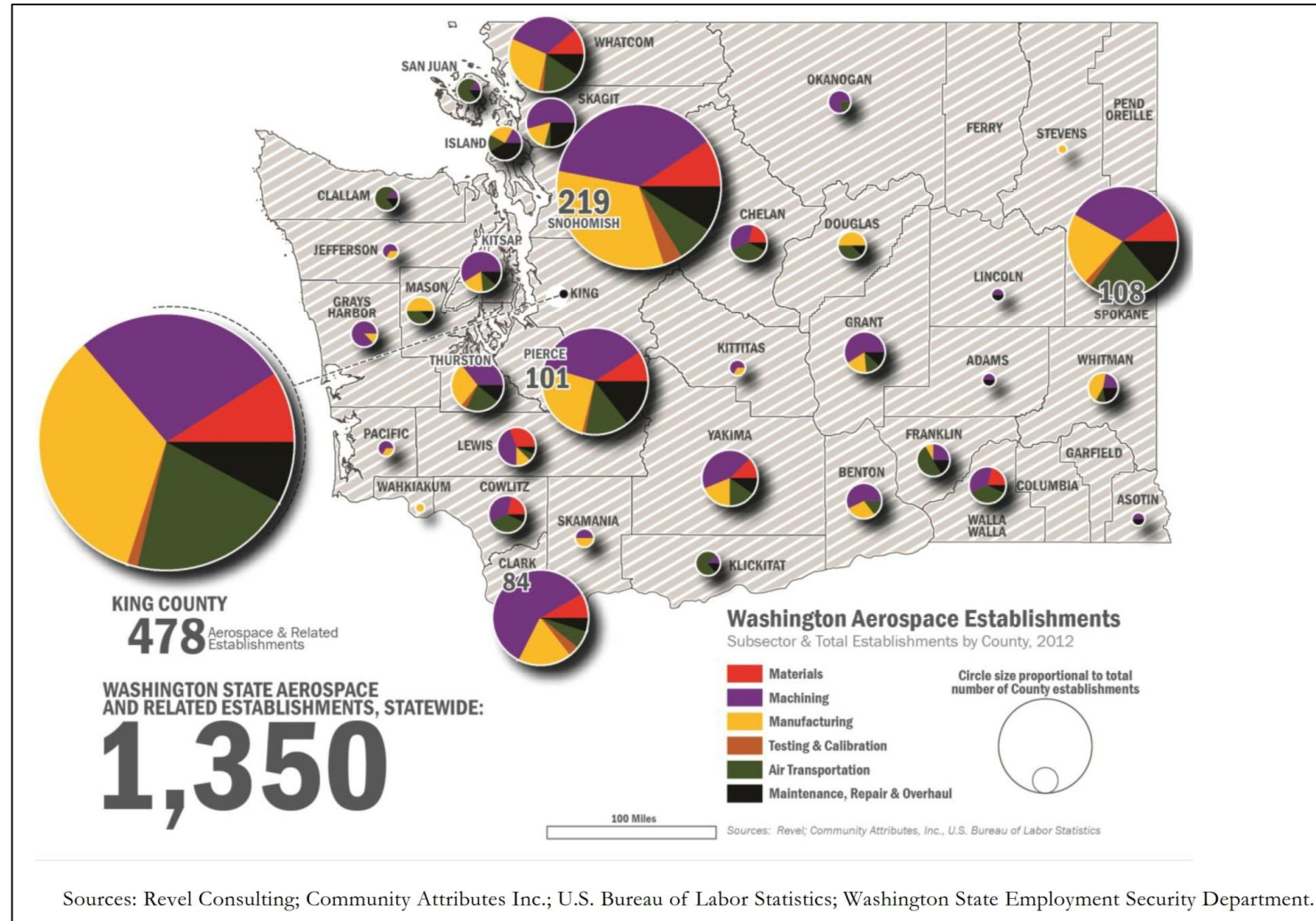
¹ Washington State Aerospace Industry, Economic Impact Study, November 2013. Prepared by Community Attributes, Inc.

Figure 1 – Aerospace Business Locations within Washington’s Airport System



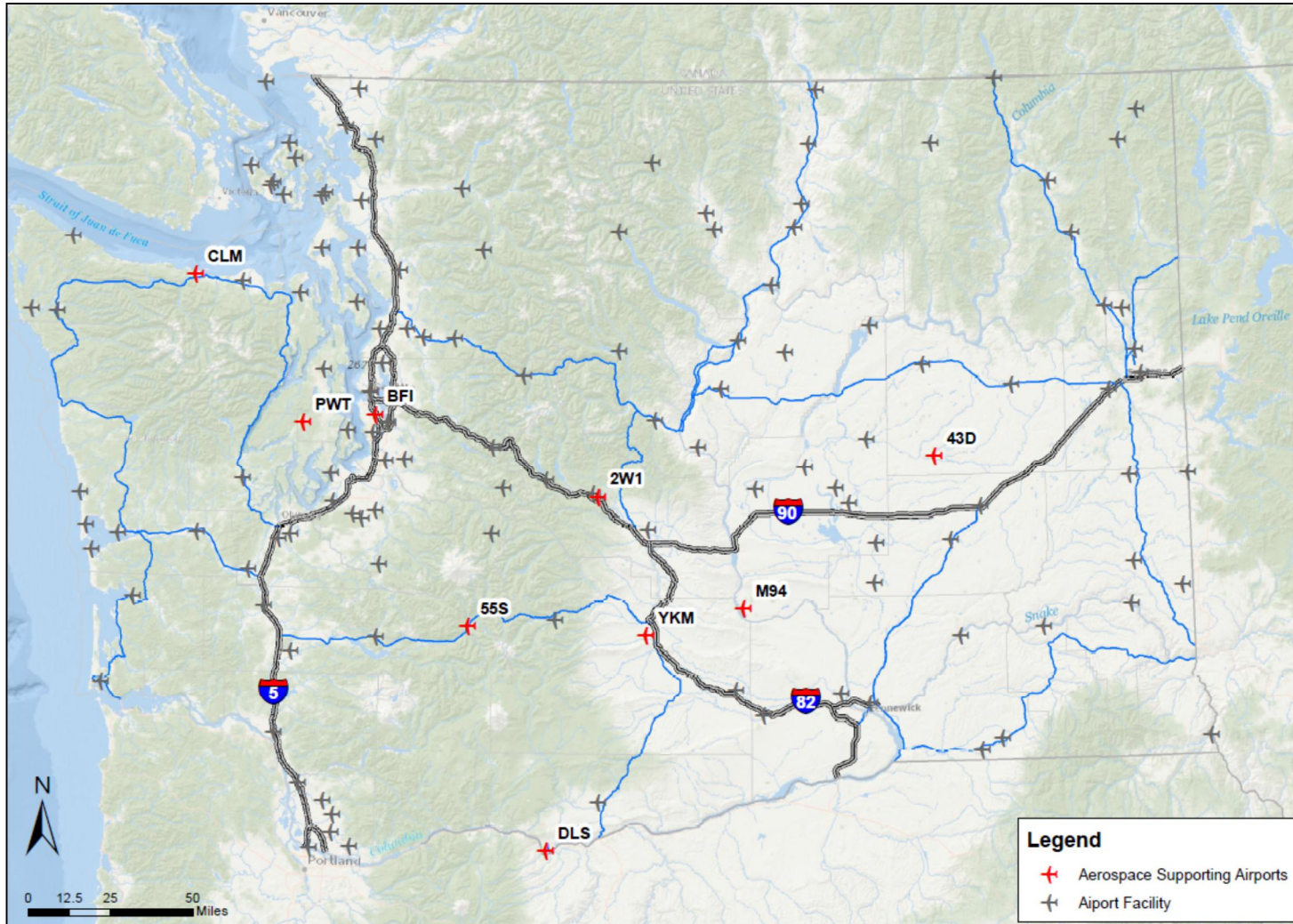
Source: USA Aerospace Business Directory

Figure 2 – Aerospace Manufacturing Subsector Breakout



Source: Washington Aerospace Partnership, Economic Impact Study, November 2013.

Figure 3 – Aerospace Supporting Airports



Source: WSP|Parsons Brinckerhoff, 2016.

Positioning/Partnerships

There are several ways for airports and local jurisdictions to position themselves to attract aerospace manufacturing companies to establish operations at their facilities. The State of Washington currently provides multiple tax incentives as a tool to support Washington's aerospace sector. These incentives are mainly in the form of preferential rates and tax credits for the state business and occupation (B&O) tax. Local jurisdictions can further add to these incentives through local tax breaks or additional incentives at the municipal and county levels to make their facility more attractive to prospective manufacturing companies.

Infrastructure improvements at airports to make sites ready for development are another option to attract prospective aerospace manufacturing companies. This can include runway access, transportation infrastructure, utility infrastructure, etc. In conjunction with infrastructure improvements, airport operators and the associated local permitting agencies can setup fast track permitting processes for large developments to streamline the approval process.

Partnering with local universities and colleges to develop aviation, aerospace, manufacturing, and aviation maintenance classes and programs can also increase opportunities for airports. Having a local labor pool with access to applicable training capabilities near to a potential facility can increase the desirability of an airport seeking to attract aerospace manufacturers.

Workforce Development

Washington State has created a strategy to encourage the growth and satisfaction of the aerospace industry in Washington. A major part of that strategy is the ability to develop a strong workforce locally. Technically-skilled employees are in high-demand in the aerospace industry and are providing the industry the necessary measures they need to compete to be able to stay in Washington.

The efforts to develop programs that offer the job training and technical skills requested by the aerospace industry have expanded rapidly in response to need, funding and incentives provided by Washington State. Universities, community colleges, technical schools and apprenticeship programs have increased their focus and abilities to produce the workforce needed to the industry. Examples of the organizations and their expansions are described below.

Training Centers

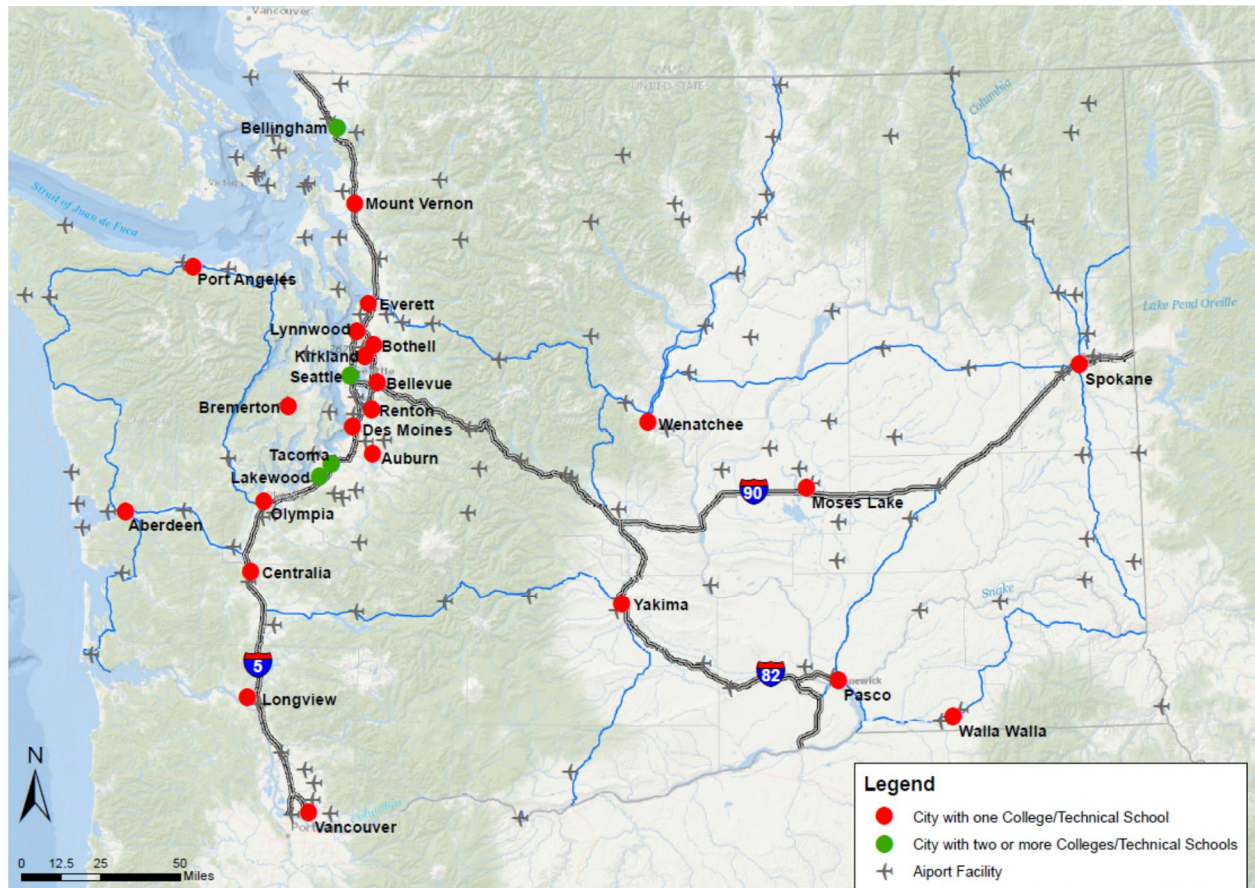
The Washington Aerospace Training & Research (WATR) Center was created in June 2010. The center has developed a 12 week program that focuses on the exact skills individuals need to enter the workforce. The educational programs offered prepare students for the high-demand aerospace jobs in the shortest amount of time possible. The Center works alongside Edmonds Community College to provide college credit and Certificates of Completion to further each student's development and open the doors for aerospace and manufacturing careers.

The Washington Manufacturing Advanced Training Institute (WMATI) has been a recent expansion of the WATR Center. The training institute is focused on developing higher-level skills that Boeing and other manufacturing companies need to give them the competitive edge in the industry. Having the institute local saves companies from spending money to send their employees abroad for this type of training.

Community Colleges & Technical Schools

State and Federal funding has been distributed to many technical and community colleges. These schools were chosen because of their focus on training for aerospace jobs in Washington. Community Colleges have historically served to provide training for local industries, and this funding will allow these Washington schools to continue providing training to the aerospace industry. These 22 "Workforce Development Centers" are located across the state at or near airports, as depicted on **Figure 4**.

Figure 4 – Workforce Development Centers



Source: Center of Excellence for Aerospace & Advanced Manufacturing
WSP|Parsons Brinckerhoff, 2016.

The workforce centers include aerospace courses or training in:

- Machining
- Electronics
- Engineering
- Material Science
- Aviation/Aerospace
- Composites
- Design
- Mechanical
- Manufacturing

Community Colleges in Spokane have responded to Washington's desire to grow the aerospace industry. They have expanded and created many degrees/certificates available within the aerospace industry. Many of these educational additions are rare and not available in other areas around the country. This program will draw in other manufacturing businesses to the state looking for this trained local workforce. They have adapted the motto of "If we don't have it, we will make it available for you."

The Advanced Manufacturing Training & Education Center (AMTEC) at Everett Community College has also expanded in response to Washington's industry strategy. AMTEC is expanding in space and programs/classes. They will add 17,000 additional square feet to their current space to provide more classrooms and a new Mechatronics program. Everett with AMTEC prides itself on providing students a "work-ready" lifestyle. They work closely with manufacturing partners to have industry credentials and prepping students for the work environment they will be entering. AMTEC has had close interaction with Boeing and other employers to validate their classes and training programs. Unique training models attract many students to the school, including partners with manufacturing programs, live production lines, and workforce development continuing education programs.

The other colleges provided funding are expanding and adapting to the industry needs in these ways and their own as well. The schools have become more responsive to the needs of the workforce/employment. They have developed desired relationships between the industry and the education. The education has been adjusted to be industry driven; skills wanted from the industry have come straight from the companies into the classrooms. Not only individuals and technology can be innovative, but now education can as well. An example of this is the schools ability to change its traditional scheduling. Several schools have adapted programs that can be started quarterly. Instead of a student having to wait a semester or even a year to obtain technical skills needed in the workforce, they are able to join programs on a quarterly schedule. This allows students and employees flexibility and sends newly trained workers into the workforce at a more rapid pace to meet the demand of the industry.

High Schools

Washington State is changing the culture, and putting a manufacturing job in a new and positive light early on. There is now technical curriculum beginning in high schools. Common skills sets are being taught and allowing students to choose a manufacturing career path. Adding this step early on allows quick advancement into the industry and a focused academic path. The WATR center is partnering with high schools providing a program to move individuals quickly from the high school curriculum into their training and out into the workforce. Students can complete 8 hours of training in high school and put in two months of training at the WATR Center and be prepared to the work in the industry. This rapid pace is exactly with companies are looking for to locally fulfill the high-demand of mid-level technically skilled jobs.

Summary

Providing a skilled labor force is key to maintaining Washington position as the aerospace center for the US. Expanding opportunities for aerospace manufacturing and the associated supply chain across the state at interested airports would benefit not only the airport but the community. Airport would benefit financially and be more self-sufficient, communities would benefit with additional skilled workers the economic impact this generates. The community and airports must collaborate and develop aerospace/aviation awareness, networking and mentoring opportunities. Airway Heights is a community in Spokane, near Spokane International Airport, that has developed an active program to encourage aerospace firms to locate in their community.